

GT  
concl'd

Z is hydrogen or a protecting group; and  
Support is the solid support.

### REMARKS

Claims 104-107, as amended, appear in this application for the Examiner's review and consideration. Claims 104-107 have been amended to correct inadvertent minor spelling and editorial errors, but no new matter has been added. Claims 104-107 have been amended to recite CH<sub>2</sub>OP, wherein P is a protecting group. The amendment to claims 104-107 is supported in the specification at page 12, line 8.

Claims 104-107 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for the reasons set forth on pages 2-3 of the Office Action. Claims 104-107 have been amended, rendering this rejection moot.

The Office Action alleges that the term "alkyl radical" should read "alkylenyl diradical." Additionally, the Office Action alleges that "the structural attachment point of the purine or pyrimidine is not defined and suggests a very serious technical error because the noted 'CH<sub>2</sub>-O-' location is almost always the site used to attached the oligonucleotide chain being synthesized." The claims as amended render this rejection moot. The term "alkylenyl" is commonly understood to include a divalent hydrocarbon group. This term is defined as a "divalent hydrocarbon radical" in the specification at page 7, ll. 23-31; and exemplified at page 10, ll. 2-5 and at page 15, ll. 22-23. Thus, the rejection of claims 104-107 under 35 U.S.C. §112, second paragraph, cannot stand and should be withdrawn.

Claims 104-107 stand rejected under 35 U.S.C. § 112, first paragraph for the reasons set forth on page 4 of the Office Action. Applicants respectfully traverse.

The test for enablement is whether the experimentation needed to practice the invention is undue or unreasonable. *In re Wands*, 858 F.2d 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed. Cir. 1988). A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 U.S.P.Q.2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 U.S.P.Q. 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987). For enablement, nothing more than objective enablement is required, and therefore it is irrelevant whether the teaching is

provided through broad terminology or illustrative examples. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993); *In re Marzocchi*, 439 F.2d 220, 223, 169 U.S.P.Q. 367, 369 (C.C.P.A. 1971).

The Office Action alleges that chemical formulas in claims 104-107, which show a bond directly between the 2- or 3-carbon of a ribose moiety and the linker moiety X, are not enabled in any way by the exemplifications. Contrary to the allegations of the Office Action, the linker moiety X is described in sufficient detail to enable the skilled artisan to synthesize the linker at page 10, ll. 2-5 and at page 15, line 14 to page 17, line 4 of the specification. Also, the Office Action unnecessarily requires that the synthetic schemes of the specification contain the chemical formulas in claims 104-107. Applicants remind the Examiner that compliance with the enablement requirement of 35 U.S.C. § 112, first paragraph, does not turn on whether an example is disclosed for each chemical structure. M.P.E.P. 2164.02. As nothing more than objective enablement is required, the absence of examples for each and every compound does not render the invention non-enabled. Nevertheless, the present application contains sufficient examples and synthetic schemes to enable the skilled artisan to practice the claimed invention. For example, in the present application, the schemes illustrate a subgroup of compounds within the claims, as all compounds need not be illustrated within the schemes. Also, to be enabling the application does not need to teach knowledge that is well known in the art, such as forming an ether linkage, which is well within the skilled artisan's abilities.

Accordingly, the rejection of claims 104-107 under 35 U.S.C. §112, first paragraph, cannot stand and should be withdrawn.

Claims 104-107 stand rejected under 35 U.S.C. § 102(a) as allegedly anticipated by Lyttle *et al.*, *Nucleic Acids Res.*, 24(14):2793-2798 (1996) ("Lyttle") for the reasons set forth at page 5 of the Office Action. Applicants respectfully traverse.

Lyttle was published during 1996, at least 3 years after the priority date of the application (July 9, 1993). Applicants respectfully remind the Examiner that he acknowledged the unavailability of Lyttle as prior art during the prosecution of parent application no. 08/591,466 in the Interview Summary dated October 2, 1997 (paper no. 8, Exhibit A). In particular the Interview Summary states: "The dates of the Vu and the Lyttle references were deemed to **render these references unavailable as the basis for valid art**

**rejections in view of the instant priority dates.”** More recently, during an interview on May 9, 2000, and as recorded in the Interview Summary for the same, the Examiner again acknowledge that Lyttle was published after the priority date of the present application. Consequently, Lyttle cannot serve as a prior art reference to the present application, therefore, the rejection is in error and must be withdrawn.

An interference, as suggested by the Examiner during the interview of May 9, 2000, is also in error, as the claims of the present application and the claims of Lyttle (as patent equivalent U.S. 5,688,940 issued on November 18, 1997) are not directed to the same subject matter.

Consequently, Lyttle does not anticipate the present claims. Accordingly, the rejection of claims 104-107 under 35 U.S.C. §102(a) as anticipated by Lyttle cannot stand and should be withdrawn.

Claims 104-107 stand rejected under 35 U.S.C. § 102(b) as anticipated by Nelson *et al.*, “Bifunctional Oligonucleotide Probes Synthesized Using a Novel CPG support are able to detect Single Base Pair Mutations,” *Nucleic Acids Res.*, 17(18), 7187-7194 (1989) (“Nelson”) for the reasons set forth at page 5 of the Office Action. Applicants respectfully traverse.

Nelson discloses a pore glass “which introduces an aliphatic primary amine to the 3’ terminus of an oligonucleotide via solid phase synthesis.” Nelson, p. 7187, final paragraph. The structure of the pore glass is disclosed in Figure 1 at page 7188.

Applicants submit that Nelson fails to teach each and every element of the claims of the present invention as recited by claims 104-107. Nelson does not disclose cyclic structures such as those recited by claims 104-107. The structure of the pore glass, disclosed in Figure 1 on page 7188, is clearly a linear structure. Accordingly, Nelson’s linear structure is not the same as the cyclic compounds of claims 104-107. Additionally, the linear structure disclosed by Nelson is chemically and structurally incompatible with ribose. Therefore, Nelson fails to teach each and every element of the cyclic compounds of claims 104-107, and cannot anticipate the present claims. Accordingly, the rejection of claims 104-107 under 35 U.S.C. §102(b) as anticipated by Nelson cannot stand and should be withdrawn.

Claims 104-107 stand rejected under 35 U.S.C. § 102(b) as anticipated by Vu *et al.*, *Bioconjugate Chemistry*, 5(5):599-606 (1995) ("Vu") for the reasons set forth at page 6 of the Office Action. Applicants respectfully traverse.

Vu was published during 1995, at least two years after the priority date of the application (July 9, 1993). Applicants respectfully remind the Examiner that he acknowledged the unavailability of Vu as prior art during the prosecution of parent application no. 08/591,466 in the Interview Summary dated October 2, 1997 (paper no. 8). *See above.* More recently, during an interview on May 9, 2000, and as recorded in the Interview Summary (paper no. 21) for the same, the Examiner again acknowledge that Vu was published after the priority date of the present application. Consequently, Vu cannot serve as a prior art reference to the present application.

Accordingly, the rejection of claims 104-107 under 35 U.S.C. § 102(b) as anticipated by Vu cannot stand and should be withdrawn.

Claims 104-107 stand rejected under 35 U.S.C. § 103(a) as rendered obvious over Lyttle for the reasons set forth on pages 6-8 of the Office Action. Applicants respectfully traverse.

As discussed above, and repeatedly admitted by the Examiner during interviews on October 2, 1997 (paper no. 8) and on May 9, 2000 (paper no. 21), Vu and Lyttle are not prior art references as Lyttle and Vu were published after the priority date (July 9, 1993) of the present application. Therefore, Vu or Lyttle cannot serve as a reference against the present application.

As to the Nelson reference, Applicants submit that Nelson fails to teach or render obvious the claims of the present invention as recited by claims 104-107. Nelson neither discloses nor suggests cyclic structures such as those recited by claims 104-107. The structure of the pore glass, disclosed in Figure 1 on page 7188, is clearly a linear structure. No suggestion to cyclize the linear structure or use a cyclic structure was disclosed by Nelson, accordingly, a skilled artisan would not have been motivated to form any cyclic structure or any 5-membered cyclic structure as those recited in claims 104-107. Additionally, the linear structure disclosed by Nelson, cannot be converted into a cyclic compound of ribose, because the linear structure is chemically and structurally incompatible with ribose. Therefore, the skilled artisan would have had no motivation to create a ribose cyclic structure or any

expectation that cyclizing the linear structure would have met with success from the Nelson reference.

In fact, Nelson teaches away from the present claims by disclosing that Nelson "possesses a uniquely engineered linking arm" which offers several specific benefits. Nelson, page 1793, third full paragraph. Nelson's strategy includes introducing a multi-functional linking arm with a masked primary aliphatic amine. Nelson, page 7193, second full paragraph. This strategy directly conflicts with the present claims. As Nelson, emphasizes the versatility of a linker arm, Nelson teaches away from using cyclic compounds, such as those of the present claims.

Consequently, the rejection of claims 104-107 under 35 U.S.C. §103(a) cannot stand and should be withdrawn.

Accordingly, it is believed that claims 104-107 are now in condition for allowance, early notice of which would be appreciated.

If any outstanding issues remain, the Examiner is invited to telephone the undersigned at the telephone number indicated below to discuss the same. No fee is believed to be due for the submission of this response. Should any fees be required, please charge such fees to Pennie & Edmonds LLP Deposit Account No. 16-1150.

Respectfully submitted,

Date 2/15/01

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All communications respecting this application should give the serial number, date of filing and name of the applicant.



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Patent and Trademark Office

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Application Number	Filing Date	First Named Applicant	Attorney Docket Number
08/591,466	01/11/96	Baronova	5023/P60188

Examiner
L. E. Crane

Art Unit	Paper No.
1211	8

DATE MAILED: n/a

### INTERVIEW SUMMARY

All participants (applicant, applicant's representative, PTO personnel)

- (1) Mr. William E. Player  
(2) Examiner L. E. Crane

(3) ☐  
(4) ☐

Date of Interview: October 2, 1997

Type: ☐ Telephonic ☒ Personal (copy given to) ☐ applicant ☒ applicant's representative

Exhibit shown or demonstration conducted: ☐ Yes ☒ No If yes, brief description: See attachment.

Agreement ☒ was reached with respect to some of all of the claims in question. ☐ was not reached

Claim(s) discussed: See page 2.

Identification of prior art discussed: See page 2.

Description of the general nature of what was agreed to if an agreement was reached, or any other comment:  
See page 2.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would be allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

1. ☐ It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary, A FORMAL RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP § 713.04) If a response to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

2. ☐ Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, the completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.

Examiner Note: You must sign this form unless it is an attachment to another form. 3  
PTOL-413 (amended 4/4/97)

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Continued on next page(s) ->->

Serial No. 08/591,466

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Art Unit 1211

### INTERVIEW SUMMARY(cont.)

Claims discussed: All claims remaining of record, claim 7 specifically.

Identification of prior art discussed: Webb '774; Nelson (Ref. Y); Vu (ref. U), and Lyttle (Ref. S).

Description of the general nature of what was agreed to if an agreement was reached, or any other comment: Review of the specification and comparison with the Webb reference was carried out. No agreement could be reached as to whether Webb was a proper prior art reference. The dates of the Vu and the Lyttle references were deemed to render these references unavailable as the basis for valid art rejections in view of the instant priority dates. The Nelson reference was not discussed.

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☒ Applicant